II. REMARKS

Preliminary Remarks:

Entry of the foregoing amendments is respectfully requested.

The specification is amended to identify the ATCC accession number of hybridoma cells that produce antibodies 24-31, which were deposited with the ATCC under the terms of the Budapest Treaty.

Claims 2 , 3, 24, 30, 31, 33, and 34 are amended, and claim 32 is canceled. In re-numbering claims in the event of allowance, please note that the present set of claims does not include a claim no. 20.

Claim 2 is amended to be directed to the disclosed improved method of treating an autoimmune disease or disorder that comprises (i) obtaining anti-gp39 antibodies, (ii) assaying to identify anti-gp39 antibodies that inhibit the gp39-CD40 interaction, (iii) assaying to identify anti-gp39 antibodies that are substantially non-agonistic of a T-cell activation response selected from the group consisting of T-cell proliferation, IL-2 production, IL-4 production, and IFN-γ; (iv) identifying anti-gp39 antibodies that both inhibit the gp39-CD40 interaction and are substantially non-agonistic of said T-cell activation response; and (v) administering a therapeutically effective amount of said anti-gp39 antibodies that inhibit the gp39-CD40 interaction and are substantially non-agonistic of said T-cell activation response. This amendment conforms the language of the claim to that of the description of the invention in the specification. In particular, the claim is amended to refer to a T-cell activation response, and to specify a T-cell activation response selected from T-cell proliferation, IL-2 production, IL-4 production, and IFN-γ production, as described, for example, on page 12, lines 28-30.

Claims 30, 31, 33, and 34 are similarly amended to refer to a T-cell activation response, and claims 3, 31, and 33 are further amended to refer to production of IL-2, IL-4, or IFN-γ, in conformance with the language of the written description.

Claims 24 and 30 are further amended to specify that antibody 24-31 is produced by hybridoma cells assigned ATCC accession no. HB-11712.

Claim 32 is canceled, as its subject matter is incorporated into amended claim 31.

Patentability Remarks:

35 U.S.C. §112, First Paragraph – written description

Claims 2, 3, 5, and 16-39 were rejected under 35 U.S.C. § 112, first paragraph, because the specification allegedly does not provide adequate written description of:

(i) anti-gp39 antibodies that are "substantially" non-agonistic of a T-cell activation response selected from the group consisting of T-cell proliferation and the production of IL-2, IL-4, or IFN- γ;

(ii) anti-gp39 antibodies that are non-agonistic of secretion of "at least one cytokine" or of IL-2 "by T-cells."

With regard to (i) above, the applicants respectfully traverse the rejection under 35 U.S.C. § 112, first paragraph, because the application specification clearly describes anti-gp39 antibodies that are substantially non-agonistic of the disclosed T-cell activation responses. The examiner's attention is directed to examples 18-21 described on pages 55-57 of the specification, and also to Figures 16-20, to which the examples refer. The graphs in Figures 16-20 show that anti-gp39 antibodies according to the claimed invention may have agonistic activity for the disclosed T-cell activation responses (*i.e.*, T-cell proliferation and production of IL-2, IL-4, and IFN- γ) that is definite, but is low or nearly negligible in comparison to the agonistic activity of a gp39-binding agent such as TRAP-1 antibody. Accordingly, one of skill in the art would reasonably have regarded the description of the invention in the application as conveying that the inventors were in possession of the claimed improved method comprising screening and identifying anti-gp39 antibodies that are substantially non-agonistic of the disclosed T-cell activation responses.

With regard to (ii) above, the claims are amended so that they do not refer to secretion of IL-2 or an unspecified cytokine by T-cells. In particular, amended claims 2, 3, 31, and 33 refer to anti-gp39 antibodies that are substantially non-agonistic of production by T-cells of a cytokine selected from IL-2, IL-4, and IFN-γ, as described, for example, on page 12, lines 28-

30. Examples 18-20 describe examples of assays that may be used to quantitatively detect the production of IL-2, IL-4, and IFN-γ by T-cells in the presence of anti-gp39 antibodies in accord with the claimed invention. In view of the foregoing, the applicants respectfully request that the rejection of claims 2, 3, 5, and 16-39, under 35 U.S.C. § 112, first paragraph, for lack of written description be withdrawn.

35 U.S.C. §112, First Paragraph – scope of enablement

Claims 2, 3, 5, 16-31, and 34-39 were rejected under 35 U.S.C. § 112, first paragraph, because the specification enables a method wherein the production of IL-2, IL-4, or IFN-γ is determined as a measure of a T-cell activation response, but it allegedly does not enable a method wherein the T-cell activation response that is measured is production of at least one unspecified cytokine by a T-cell, or wherein the measured T-cell activation response is not specified in the claim.

As discussed above, the claims are amended to be directed to an improved method of treating an autoimmune disease or disorder that comprises identifying anti-gp39 antibodies that inhibit the gp39-CD40 interaction and are substantially non-agonistic of a T-cell activation response selected from T-cell proliferation or the production of IL-2, IL-4, or IFN-γ. The application clearly describes assay methods that one of skill in the art may use to successfully practice the claimed invention without undue experimentation. For example, see Examples 18-21 on pages 54-57. Accordingly, withdrawal of the rejection of claims 2, 3, 5, 16-31, and 34-39, under 35 U.S.C. § 112, first paragraph, for lack of enablement is respectfully requested.

35 U.S.C. §112, First Paragraph – enablement by the specification

Claims 2, 3, 5, and 24-30 were rejected under 35 U.S.C. § 112, first paragraph, because the specification allegedly does not describe antibody 24-31 in terms that enable one to practice the claimed invention.

The specification is amended to state that cells of a hybridoma that produce antibodies 24-31 were deposited on September 2, 1994, with the American Type Culture Collection (ATCC), currently located at 10801 University Boulevard, Manassas, VA 20110-2209, and that the ATCC has assigned the deposited hybridoma cells the ATCC Accession No. HB-

11712. Attached to this response is a copy of an ATCC deposit receipt for the deposit of hybridoma cells that produce antibodies 24-31, showing the date of deposit and stating that the deposit was made under the provisions of the Budapest Treaty. Withdrawal of the rejection of claims 2, 3, 5, and 24-30, under 35 U.S.C. § 112, first paragraph, for lack of enablement is therefore respectfully requested.

35 U.S.C. §112, Second Paragraph

Claims 2, 3, 5, and 16-39 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite.

a) Claims 2, 3, 5, and 16-39 were considered indefinite because the claims do not set forth the specific method steps that are practiced in screening to determine if an anti-gp39 antibody of interest is substantially non-agonistic of a T-cell activation response such as the production of IL-2 or IFN-γ. The applicants respectfully traverse this ground of rejection. The application describes examples of methods for quantitatively detecting the production of cytokines such as IL-2, IL-4, and IFN- γ in a T-cell activation assay (see examples 18-20 on pages 54-56). Persons of skill in the art at the time of filing would have been familiar with these and other known, routine methods that could be used successfully to practice the claimed invention. Accordingly, the applicants submit that it is not necessary for the claims to specify the particular assay technique used to detect the production of a cytokine associated with T-cell activation in practicing the claimed method in order to comply with the requirements of 35 U.S.C. § 112, second paragraph.

b) Claims 2, 3, 5, and 24-30 were considered to be indefinite because the meaning of "24-31" antibodies was allegedly unclear. As discussed above, 24-31 antibodies are specific antibodies that are produced by hybridoma cells deposited under the terms of the Budapest Treaty and assigned ATCC accession no. HB-11712. Claims 24 and 30, which refer to intact 24-31 antibodies, are amended to identify the ATCC accession no. of the deposited hybridoma cells that produce 24-31 antibodies. Withdrawal of the rejection of claims 2, 3, 5, and 16-39, under 35 U.S.C. § 112, second paragraph, as being indefinite, is respectfully requested in view of the foregoing.

35 U.S.C. §102(a) and (e)

Claims 2, 3, 5, 16-30 and 36-39 were rejected under 35 U.S.C. § 102(a)(e) as allegedly being anticipated by Black et al. (U.S. Patent No. 6,001,358).

Claims 2, 3, 5, 16, 17, 19-28, 30, and 36-67 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Noelle et al. (U.S. Patent No. 6,328,964).

The applicants respectfully traverse both grounds of rejection under 35 U.S.C. § 102. As discussed above, the claims of the present application are directed to the disclosed improved method of treating an autoimmune disease or disorder that expressly includes the steps of:

(1) assaying to identify anti-gp39 antibodies that inhibit the gp39-CD40 interaction,

(2) assaying to identify anti-gp39 antibodies that are substantially non-agonistic of a T-cell activation response selected from the group consisting of T-cell proliferation, IL-2 production, IL-4 production, and IFN-γ; and

(3) identifying anti-gp39 antibodies that inhibit the gp39-CD40 interaction and are substantially non-agonistic of said T-cell activation response.

Neither Black et al. nor Noelle et al. describes a method for obtaining anti-gp39 antibodies that includes steps (2) and (3) described above. Therefore, withdrawal of the rejections of claims under 35 U.S.C. § 102(a)(e) as being anticipated by Black et al., and under 35 U.S.C. § 102(e) as being anticipated by Noelle et al., is respectfully requested.

35 U.S.C. §103(a)

Claims 2, 3, 5, and 16-39 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable in view of Black et al. (U.S. Patent No. 6,001,358), considered in combination with Schrader et al. (U.S. Patent No. 5,627,052) and Burkly et al. (US2002/0028202 A1).

As stated above with regard to the rejection of claims under 35 U.S.C. § 102(a)(e), Black et al. did not describe the disclosed improved method of treating an autoimmune disease or disorder that comprises the steps of :

(1) assaying to identify anti-gp39 antibodies that inhibit the gp39-CD40 interaction,

(2) assaying to identify anti-gp39 antibodies that are substantially non-agonistic of a T-cell activation response selected from the group consisting of T-cell proliferation, IL-2 production, IL-4 production, and IFN-γ, and

(3) identifying anti-gp39 antibodies that inhibit the gp39-CD40 interaction and are substantially non-agonistic of said T-cell activation response.

Prior to the present invention, it was not known that anti-gp39 antibodies could be obtained that inhibit the gp39-CD40 interaction and are substantially non-agonistic of a T-cell activation response selected from the group consisting of T-cell proliferation, IL-2 production, IL-4 production, and IFN-γ. The Schrader et al. and Burkly et al. references also did not describe or suggest a method for obtaining anti-gp39 antibodies that comprises performing multiple assays to identify anti-gp39 antibodies that inhibit the gp39-CD40 interaction and are substantially non-agonistic of a T-cell activation response selected from the group consisting of T-cell proliferation, IL-2 production, IL-4 production, and IFN-γ. Accordingly, the claimed invention could not have been obvious in view of Black et al. in combination with Schrader et al. and Burkly et al. Withdrawal of the rejection of the claims under 35 U.S.C. § 103(a) as being unpatentable in view of Black et al., in combination with Schrader et al. and Burkly et al., is therefore respectfully requested.

Conclusion

All rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance and a Notice to that effect is earnestly solicited. If any points remain in issue, which the examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

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Attachments:

Attached hereto is a copy of an ATCC deposit receipt for the deposit of a hybridoma that produces antibodies 24-31.